

# PATENT SPECIFICATION



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## PROVISIONAL SPECIFICATION.

### Improvements in Bottles or Containers Made of Flexible Material.

I, ALFRED REINHOLD JAHN, of 15, Britannia Street, King's Cross, London, W.C. 1, British Subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in bottles or the like made of flexible materials.

The invention has particular reference to bottles of flexible or semi-flexible material which are employed for the delivery of cream, milk, or the like, or for containing paste or powder materials, the closures for which, after use, are destroyed or seldom used again.

Hereinafter the bottle is referred to mainly as a flexible bottle of paper or like material adapted to be used for milk, but it should be understood that it may contain other substances as stated.

In the case of a cardboard or paper bottle, preferably of parallel form, I associate with the disc closure a top to the bottle which is permanently fixed within an upstanding recessed double flange reinforced above the said top, by means which form a slight bulge on the internal periphery of the portion of the side wall projecting above the said top.

The disc closure with its projecting tag is then pushed into the top, being held therein by the bulging inside flange of the said top which of course is formed with a hole in the centre, through which the bottle is filled and emptied.

Preferably the reinforced edge of the side wall of the bottle may be formed by the insertion thereover of a perforated double flange disc, rolling the inside and outside flanges together after application, thus squeezing the side wall just over the top so as to form a composite edge above the fixed top, thereby not only obtaining the bulge desired, but also securing the fixed top with its flanges in place and stiffening the bottle.

The bottom of this flexible bottle or container may also be formed in a similar manner by the insertion and affixing over the edge of the bottle tube side wall a similar disc which is not perforated, making a tight joint with the tube part by rolling the two flanges together and

squeezing the tube edge.

Before the application of the closure disc therefore the container for milk will be a tube, preferably cylindrical, having a double flanged disc, made either of carton material or tinned iron, at either end, of which the upper flanged disc is provided with a central hole, and when in use, after filling, the closure disc is forced with slight pressure into place above this hole.

The closure disc is usually applied with some pressure by making use of its flexibility, so that it retains its position during the delivery of the filled container before use. For better air-tight security the underneath side of the closure disc may be wax covered, leaving the upper side clean for advertisement printing; or cellulose or cellulose derivative may be applied instead of wax in this connection.

As an alternative to the previously described bottom of this flexible bottle, I may insert the tube part into a cup-shaped bottom, affix same with water-proof adhesive, and, if required, roll the cup bottom and tube together.

Consumers of milk are generally used to judging the quality of the milk supplied in glass bottles by the amount of cream resting on top of the milk which can be noticed through the glass.

Although I may use for the tube part of the flexible bottle parchment paper either overlapping or rolled together in several layers, the container may be made of opaque paper when the cream line cannot be seen; therefore, I associate the flexible bottle as described with small windows inserted near the top of the container. This is done by making slots opposed to each other into two opposite walls of the container, and covering the slots inside the container with transparent material, the material to be affixed with waterproof adhesive.

Heretofore containers for receiving liquids have been made of waterproof material and also of ordinary material, upon the inside of which a film of wax has been formed by immersion—or filling same and emptying the container—with wax in liquid form previous to filling

with milk or the like. Some users, however, object to wax in this connection and a film may be made according to this invention with a solution of waterglass, rubber, gelatine, agar-agar, collodion colloidal cellulose or dope, such for example as amyl acetate in which has been dissolved not less than  $2\frac{1}{2}\%$  of nitro cellulose dry weight, and to which an adhesive addition of soluble copal gum has been made say  $8\frac{1}{2}$  lbs. to each 100 lbs. of nitro cellulose and solvents. This solution may be deposited both inside and outside on the flexible bottle, or on the inside only, and the film must of course be without harm to the contents; the film is an additional security in prevention of leakage.

An alternative film may be made with a deposit of lacquer, cellulose or cellulose derivative—such, for example, as cellulose acetate—applied while in liquid form or as a dry film fixed to the body material by an adhesive. Such a film, though readily flexible, would be non-extensible. Whether covered with a film in liquid form or with a dry film, the film may be applied to material in bulk from which the parts are made after cutting up.

It should be understood that the manufacture of the flexible bottle may be either in a similar manner to that already in

extensive use as cream cartons, or they may be made all in one piece—open at one end—by the papyroplastic process, producing what is commonly known as papier maché; when covered with film, as before mentioned, this lining is suitable for the reception of milk or other liquids and without the possibility of leakage or harm to the contents.

It is pointed out that the containers made and lined as described and supplied with the respective closure and seal will apply not only to milk but to other liquids which may be found suitable for them to hold, and also to powders, salts, and any material which must be packed damp-proof to prevent their deterioration.

For this invention of the bottle or flexible container as described, machinery can be readily designed for automatically making them, and for their filling and closing, which operations may be done with reduced working cost and with the additional advantage in the finished filled container that any unauthorised tampering with the closure is apparent to the consumer.

Dated the 25th day of July, 1928.

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## COMPLETE SPECIFICATION.

### Improvements in Bottles or Containers Made of Flexible Material.

I, ALFRED REINHOLD JAHN, of 15, Britannia Street, King's Cross, London, W.C. 1, British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to flexible containers or cartons, and has more especial reference to bottles of paper, papier maché and similar materials employed in the delivery of milk and like food stuffs.

Hitherto it has been the practice to render such containers waterproof and impermeable by providing them with a coating of wax, but such coating has, among others, the inherent disadvantage of making the bottles objectionable to the touch, particularly in hot weather.

The present invention has for its object to provide means whereby such bottles or cartons can be rendered waterproof and impervious, which at the same time improve the appearance and touch of the finished article.

In accordance with the invention a flexible container or carton of paper, papier maché or the like for the delivery of food stuffs such as milk, has its interior surface, or if desired both its interior and exterior surfaces, provided with a waterproof covering of cellulosic material applied in a liquid or plastic state and secured to the carton by a separate adhesive.

Preferably the adhesive consists of copal gum incorporated in the cellulosic material prior to its application as a covering.

A suitable covering has been found in the form of a cellulosic dope comprising amyl acetate in which has been dissolved not less than  $2\frac{1}{2}\%$  of nitro cellulose, and to each 100 lbs. of which mixture an adhesive addition has been made of about  $8\frac{1}{2}$  lbs. dry weight of copal gum, soluble in the mixture, the covering being capable of application to the bottle or carton in the customary manner by dipping the latter in a bath of the covering dope where

both inner and outer surfaces of the carton are to have the covering applied, or where the inside only is to be treated by filling the bottle or carton with the dope, say in an ordinary bottling machine, and then emptying its contents, either treatments leaving a thin closely adhering impervious and waterproof covering which renders the bottle or carton well suited to its use in the delivery of milk or the like.

The bottle may have a disc closure, or may be of the type recently introduced in which closure is effected by flattening the neck portion and forming a joint between the opposed faces of the flattened neck by suitable means, access to the contents of the bottle only being had after the neck of the bottle has been cut and the bottle rendered unfit for further use.

In either case it is desirable that the contents of the bottle be visible without the closure having to be removed, and to this end windows may be provided in its walls covered by the cellulosic dope or other transparent paper, through which the contents of the bottle may readily be seen.

The invention will be further described with reference to the accompanying drawings which illustrate by way of example a bottle carton adapted for the receipt of a disc closure to which the invention is readily applicable, and in such drawings:—

Fig. 1 illustrates the bottle carton in side elevation;

Fig. 2 in plan view;

Fig. 3 in vertical section; and

Fig. 4 again in plan view similar to Fig. 2, but with the closure removed.

Referring now to the drawings, 1 generally designates a carton of bottle form and adapted for containing, say, a pint of milk ready for delivery, being constructed from a cylinder 2 of cardboard or similar material of a slightly conical form providing a large area at its base to facilitate its maintaining an upright position.

The lower edge 3 of the conical cylinder 2 is rolled or flanged and provided therein with a bottom 4 constructed of similar material to that constituting the carton and secured in position in any suitable manner, for instance by means of adhesive or solvent.

At the upper and smaller end 5 constituting the neck of the bottle, an annular collar 6 with a re-entrant flange 7 constitutes a seating for a closure such as 8 when inserted and is secured to the neck of the bottle by adhesive or solvent.

The closure 8 is shown with a customary tag 9 to facilitate removal, and in order that the contents of the bottle may be seen without disturbing the closure, a pair of

diametrically opposite windows 10 are provided near the upper end of the bottle so that when employed for the delivery of milk the quality can be estimated by the superficial layer of cream.

In accordance with the invention the whole of the inside surface is provided with a waterproof covering of cellulosic material, preferably a cellulosic dope comprising amyl acetate in which has been dissolved not less than 2½% of nitro cellulose, and to each 100 lbs. of which an adhesive addition has been made of 8½ lbs. dry weight of copal gum.

The covering can be readily applied by a bottling machine which fills the bottle with the cellulosic solution, the bottle being almost immediately emptied of its contents and a cellulose film remaining on the interior surface of the bottle, which by reason of the gum incorporated, adheres firmly and constitutes an effective means of rendering the bottle waterproof and impermeable, while being without any deleterious action on the food stuffs likely to be delivered in the bottle.

Where both inside and outside surfaces of the bottle are to be provided with the cellulosic covering, the bottle may be simply dipped in a bath of cellulosic dope having the constitution above mentioned, and the windows 10 may have a transparent covering of the same constitution.

It will be understood that although the invention has been described as regards its preferred application to a bottle having a disc closure, it is equally applicable to bottles of other character, say to those moulded from pulp in one piece, and further that other cellulosic films may be employed as coverings, such for example, as cellulose acetate.

I am aware of Patent Specifications Nos. 112,158 and 106,375 and make no claim to anything therein described or claimed.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A flexible container or carton of paper, papier maché or the like for the delivery of foodstuffs, such as milk, having its interior surface, and if desired its exterior surface, provided with a waterproof covering of cellulosic material applied in a liquid or plastic state and secured to the carton by a separate adhesive.

2. A flexible container or carton according to claim 1, wherein the adhesive is incorporated in the cellulosic material prior to its application as a covering.

3. A flexible container or carton accord-

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ing to either of the preceding claims, wherein the adhesive consists of copal gum.

5 4. A flexible container or carton according to any of the preceding claims, wherein the cellulosic material comprises amyl acetate dope in which is dissolved not less than  $2\frac{1}{2}\%$  of nitro cellulose.

10 5. A process for rendering waterproof flexible containers or cartons made from paper and the like, consisting in the application thereto of a waterproof covering of cellulosic material applied in a liquid or plastic state and secured to the

15 6. A process for rendering waterproof flexible containers or cartons according to

claim 5, wherein the cellulosic material comprises an amyl acetate dope in which has been dissolved about  $2\frac{1}{2}\%$  of nitro cellulose and as an adhesive about  $8\frac{1}{2}\%$  of copal gum. 20

7. A waterproof flexible container or carton constructed and arranged for use substantially as described and illustrated in the accompanying drawings. 25

8. A process for rendering waterproof flexible containers or cartons substantially as described.

Dated the 3rd day of December, 1928.

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*[This Drawing is a full-size reproduction of the Original.]*

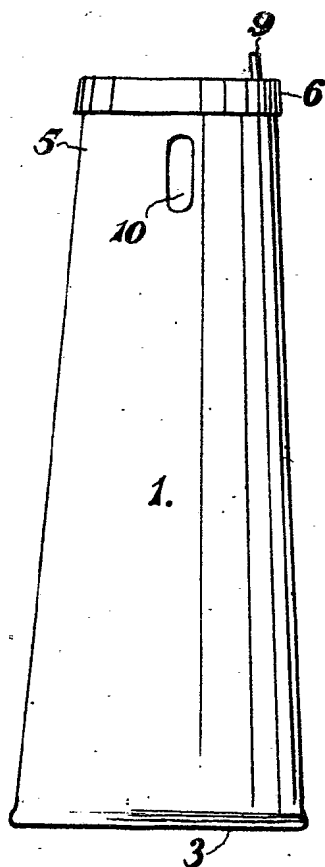


FIG. 1.

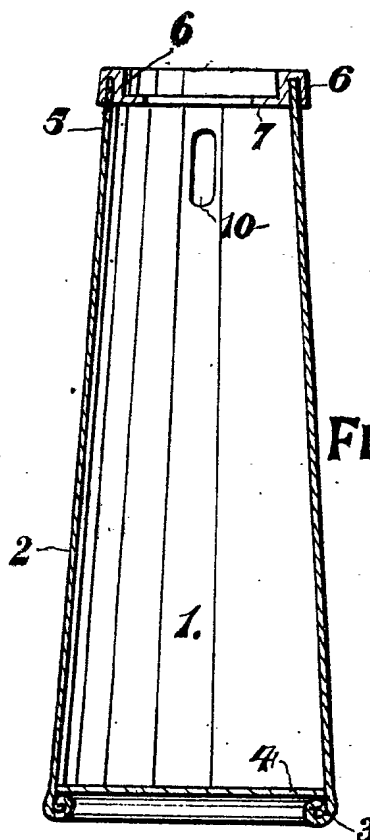


FIG. 3

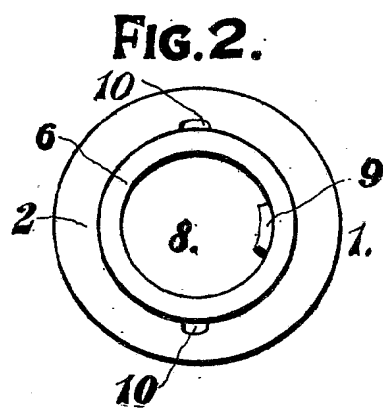


FIG. 2.

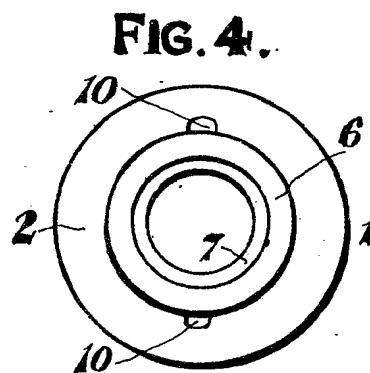


FIG. 4.